Serial Device Server

HK-880A/B/C

User ’ s Manual

Version 1.0

About Chapter System
Chapter 1.1 Overview

HighTek HK-880A/B/C series serial device connected to a network server (hereinafter referred to as: serial device server) that our company developed a high performance, low-cost serial terminal device networking products. ARM7 processor with 32-bit, combined with efficient embedded system, make the device more secure, stable running.

HighTek HK-880A/B/C series serial device server so that you do not need a lot of money to be replaced or upgraded, the original Ethernet serial devices now have Internet capability, provides information for serial data of efficient, safe, stable data channel. The product has been used extensively in the field of communication, control, such as power monitoring, monitoring, PLC, smart electricity meters, meter, biometric devices, reader, and so on environment, is to connect serial devices and TCP/IP Ethernet network bridge.

1.2 features

◆the use of 32-bit high-performance processor, ultra low-power operation.
◆the low-cost, credit card size
◆import 10/100 m Ethernet interface self-adaption, three-in-serial-port interface and optional software
◆import all signals built-in kV ESD protection
◆the maximum baud rate, long bi-directional file transfer is not lost one bit
◆support Windows serial port driver real COM, support offline settings for the virtual serial port
◆import supports universal Socket mode of operation, including TCP and UDP Server/Client.
◆import supports a maximum of six socket connection at the same time, supporting a maximum of 6 servers back up at the same time.
◆import do not have to PC, supports two serial device over the network-to-peer connection device
◆import ebuillition or cutting support.
◆serve support Web page status monitoring
◆Support for Web / Telnet / Console management console and configure a variety of ways
◆the enhanced network installation settings and IP/MAC filtering rules to ensure your configuration and network security.
◆the provision of a convenient secutest to ensure continuous improvements to product performance and reliability

1.3 norms and standards

LAN

Ethernet : 10/100 Mbps, RJ45 (including two-color indicator)
Protection : built-in 1.5 KV electromagnetic protection

Serial port

Quantity: one RS-232 or RS485 or RS422 interface
Port type: RS-232: Male DB9 (roughnessby)
RS422/485: terminals (1.5 mm spacing

RS-232 signals: TXD, RXD, RTS, CTS, DSR, DTR, DCD, GND

RS-422 signals: TX +, TX-, RX +, RX, GND

RS-485 signal: RS 485 +, RS 485-, GND

Serial port protection: all signals kV ESD protection

Serial communication parameters:

Bit: none, even, Odd

Data bits: 5, 6, 7, 8

Stop bits: 1, 1.5, 2

Flow control: RTS/CTS, DSR/DTR, Xon/XOFF

Speed: 110 ~ 115200bps

Software features

Protocol: ICMP, IP, TCP, UDP, DHCP, Telnet, http, SNMP

Tools: support for Windows 2000/XP management software

Driver support: Windows 2000/XP Real COM ¬ýåu -û

Configuration: Web browser, Telnet, Console console

Power requirements

Power input: 5 v DC

Power consumption:<1w

Mechanical properties

To： taohuadao (1 mm)

Volume: 53 * 76 * 22 (W * L* H)

The working environment

Operating temperature: 0-55 ˚ C

Storage temperature:-20 ~ 85 ˚ C (-4 ~ 185 ˚ f)

Operating humidity: 5 ~ 95% RH

Warm Tips: HighTek fractionized HK-880A/B/C series product model are as follows:

HighTek HK-880A: Port1 for RS232 mode

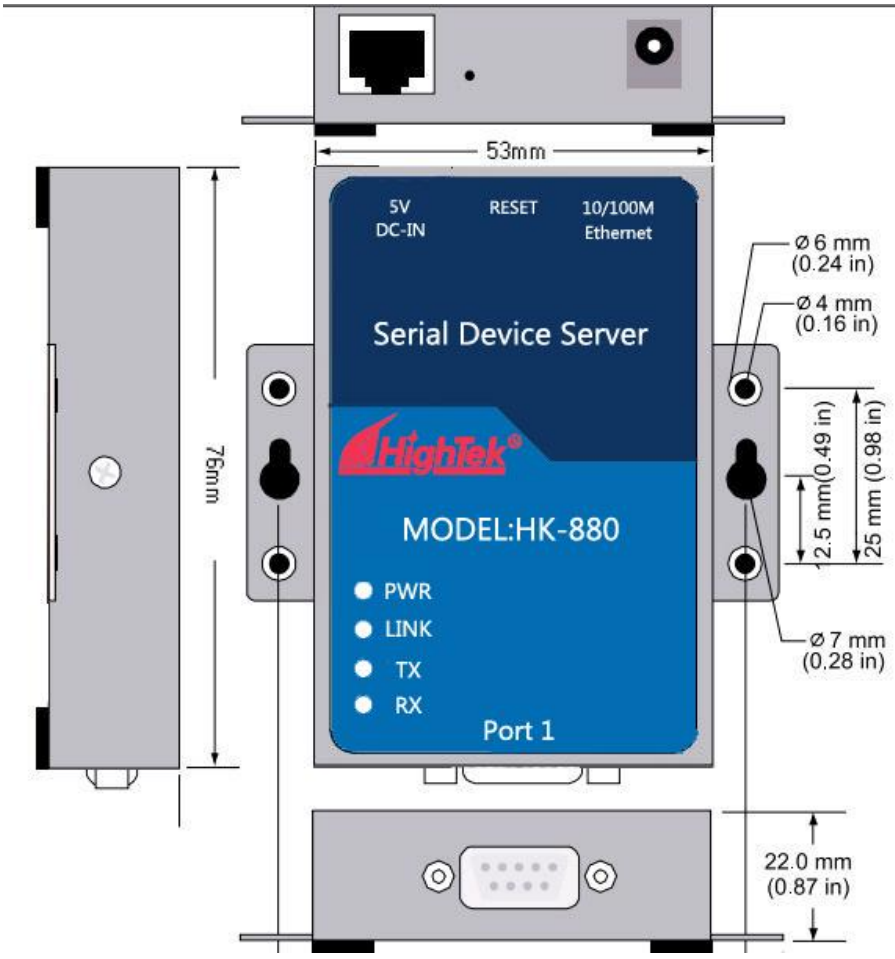
HighTek HK-880B: Port1 to RS485 or RS422 mode

HighTek RS232/422/485 HK-880C: Port1 for triple play mode

Please specify your availability before ordering the product model that is required.

Chapter II hardware installation

2.1 device structure



2.2 device installation

2.2.1 connection

HighTek HK-880A/B/C serial server products provide an output of 5V DC switching power supply adapter, plug the power adapter to connect to the rafts, the interface, DC power adapter and then insert the HighTek HK-880A/B/C of (Power Jack) DC IN input can be.

2.2.2 the connect to a network

HighTek HK-880A/B/C serial device server product provides a standard Ethernet port, you can use the through line and switch, HUB, and so on interconnection exchange equipment to connect, or by crossed lines and PC, such as terminal device to connect the network adapter card. For example: two back to back HighTek HK-880A/B/C do link (pair), crossed the network cable connection.

2.2.3 connect serial devices

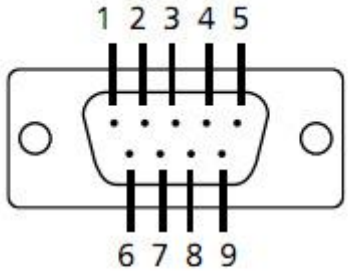
HighTek HK-880A/B/C server DB9-pin serial port interface to support the full range of RS-232 (DTE) string

Mouth signals and four-wire RS422, and two wire RS485.

DB9 pin RS232 serial port interface definitions are as follows:

DB9-M	1	2	3	4	5	6	7	8	9
RS232	DCD	RXD	TXD	DTR	GND	DSR	RTS	CTS	

RS422/485 Definition:



PIN	RS-422/485 (4W)	RS-485 (2W)
1	TxD-(A)	---
2	TxD+(B)	---
3	RxD+(B)	Data+(B)
4	RxD-(A)	Data-(A)
5	GND	GND
6	---	---
7	---	---
8	---	---
9	---	

Warm Tips:

HighTek HK-880B and HK-880C product equipped with terminals available for the customer connection.

2.2.4 indicator descriptions

HighTek HK-880A/B/C serial device server products offer six status light, lamp State is defined as follows

Indicator	Description	Color	State
PWR	Power input state	Red	Chang Liang: System Normal power
			Off: Device is not connected DC power supply
LINK	Ethernet connection instructions	Green	Chang Liang: equipment Ethernet interface to connect a normal network
			Off: Ethernet interface is not connected or connection is incorrect
TX	Serial data transmission instruction	Yellow	Flicker: serial port is sending data
			Off: Serial no data to send
RX	Serial data receiving instructions	Yellow	Flicker: serial port is receiving data
			Off: Serial No data received
RJ45-ACT	Activities directed 100M	Yellow	100M: 100M and there is data in flash
			10M: Off
RJ45-LINK	Network connection instructions	Green	Chang Liang: equipment Ethernet interface to connect a normal network
			Off: Ethernet interface is not connected or connection is incorrect

2.2.5 equipment and Reset the use of diaplasis

HighTek HK-880A/B/C provide Reset reset switch, this switch can provide the user's manual for your product for recovery operations factory settings so that users do not need to denglu HighTek HK-880A/B/C will be able to restore it to the original factory settings.

The device power-on boot steps are as follows:

The power adapter power connector into your device DC in interface, PWR lights light up, Ethernet LINK light on and then quolutiench, meryton, 5 seconds after the TX/Rx serial indicator light flashes three times at the same time, the system to complete the initialization process.

Reset Reset steps:

System power-on, TX/Rx light blinks three times before you press and hold the reset, was about 10 seconds or so, TX/Rx serial indicator abruptly at the same time, a loss of power to restart the device, you can complete the restore factory settings.

Chapter III device configuration and management

3.1 device management

HighTek HK-880A/B/C serial device server can be accessed with a Web browser, Telnet, Console console in three ways to configure, and maintain, you can select the appropriate under the circumstances of the management.

3.1.1 Web browser management

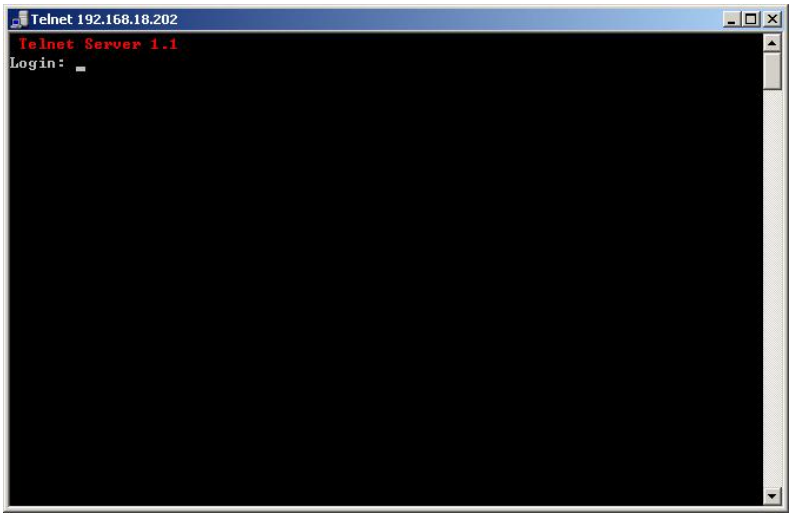
Verify that the normal HighTek HK-880A/B/C serial device server connected to the network, and need to access the computer in the same network segment, if you don't know how much of the equipment IP is the case, you can pass the Console console or the virtual serial port software to

query the IP device. In a Web browser, enter the IP address HighTek HK-880A/B/C hit return post-bypass device management interfaces, such as:

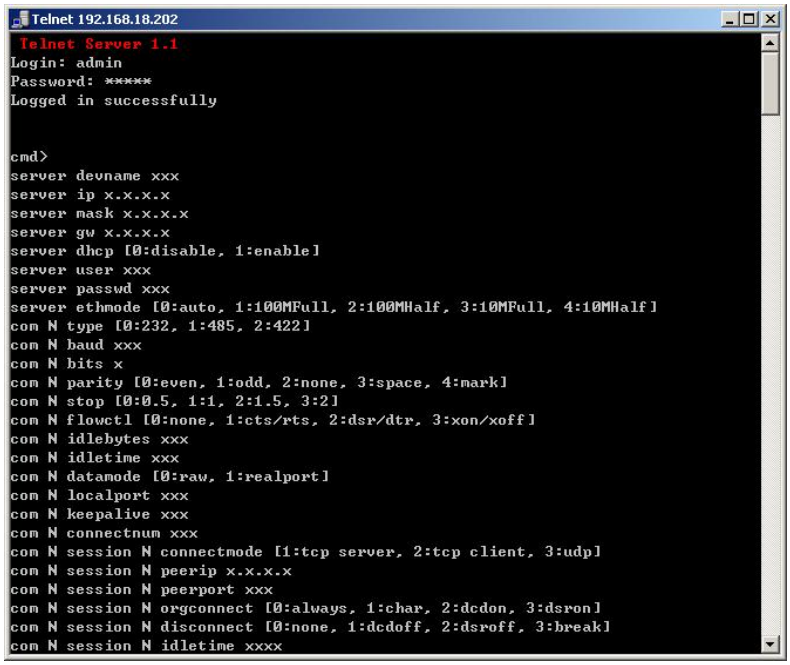
HighTek HK-880A/B/C factory default IP address: 192.168.0.200, in the browser, enter the address to go to the configuration interface. Users can field network status in the configuration interface to modify the IP address.

Version 3.1.2 Telnet management

The operating system of the Telnet terminal applications or other tools, you can directly log in to the console interface HighTek HK-880A/B/C in figure â State at the Windows command line, enter: Telnet 192.168.18.202 log on to the device:



To enter the Telnet logon interface in the future, you will be prompted for your user name and password, HighTek HK-880A/B/C the default user name and password are admin, entered to go to the admin interface:


Telnet 192.168.18.202
Telnet Server 1.1
Login: admin
Password: *****
Logged in successfully
cmd>
server devname xxx
server ip x.x.x.x
server mask x.x.x.x
server gw x.x.x.x
server dhcp [0:disable, 1:enable]
server user xxx
server passwd xxx
server ethmode [0:auto, 1:100MFull, 2:100MHalf, 3:10MFull, 4:10MHalf]
com N type [0:232, 1:485, 2:422]
com N baud xxx
com N bits x
com N parity [0:even, 1:odd, 2:none, 3:space, 4:mark]
com N stop [0:0.5, 1:1, 2:1.5, 3:2]
com N flowctl [0:none, 1:cts/rts, 2:dsr/dtr, 3:xon/xoff]
com N idlebytes xxx
com N idletime xxx
com N datamode [0:raw, 1:realport]
com N localport xxx
com N keepalive xxx
com N connectnum xxx
com N session N connectmode [1:tcp server, 2:tcp client, 3:udp]
com N session N peerip x.x.x.x
com N session N peerport xxx
com N session N orgconnect [0:always, 1:char, 2:dcdon, 3:dsron]
com N session N disconnect [0:none, 1:dcdoff, 2:dsroff, 3:break]
com N session N idletime xxxx

A Telnet log on using, you can use command line to configure serial device server, if you need help for the command prompt, type ” “ help command to display all available enter commands and command format.

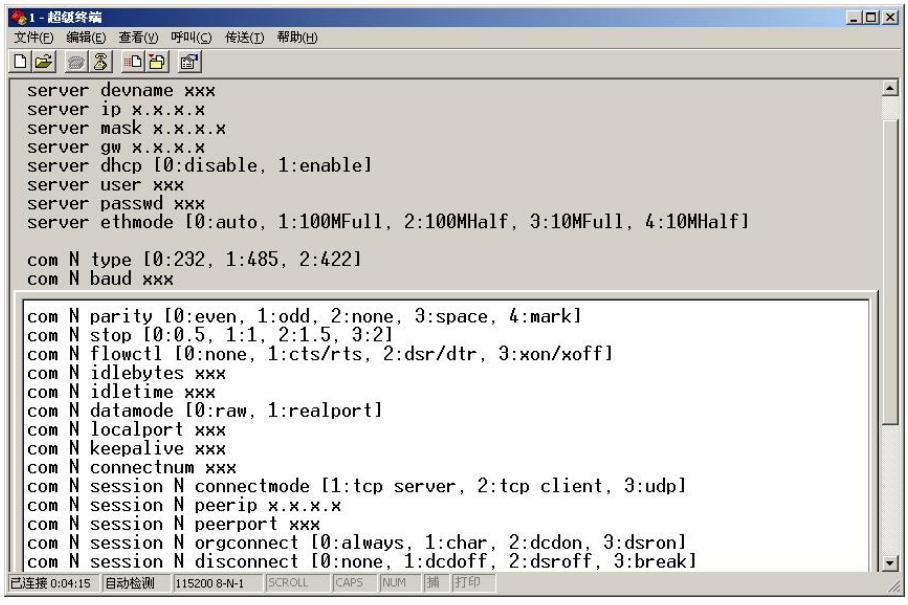
3.1.3 Console management console

HighTek HK-880A/B/C provide Console console management, this way you can get past the Ethernet while accessing the device directly through the serial port on the device. To do:

① with the cross-serial cable to connect the computer's serial port to the serial port on the HighTek HK-8008A/B/C

② Open the computer programs - Accessories - Communications - HyperTerminal, corresponding to the computer serial port speed is set to 115200bps, data bits: 8 Parity: None, Stop bit: 1, data flow control: None.

③ Press the computer keyboard on the "X" button, and then restart HighTek HK-8008A/B/C, until the screen appears the following:


1 - 超级终端
文件(F) 编辑(E) 查看(V) 呼叫(C) 传送(T) 帮助(H)
server devname xxx
server ip x.x.x.x
server mask x.x.x.x
server gw x.x.x.x
server dhcp [0:disable, 1:enable]
server user xxx
server passwd xxx
server ethmode [0:auto, 1:100MFull, 2:100MHalf, 3:10MFull, 4:10MHalf]
com N type [0:232, 1:485, 2:422]
com N baud xxx
com N parity [0:even, 1:odd, 2:none, 3:space, 4:mark]
com N stop [0:0.5, 1:1, 2:1.5, 3:2]
com N flowctl [0:none, 1:cts/rts, 2:dsr/dtr, 3:xon/xoff]
com N idlebytes xxx
com N idletime xxx
com N datamode [0:raw, 1:realport]
com N localport xxx
com N keepalive xxx
com N connectnum xxx
com N session N connectmode [1:tcp server, 2:tcp client, 3:udp]
com N session N peerip x.x.x.x
com N session N peerport xxx
com N session N orgconnect [0:always, 1:char, 2:dcdon, 3:dsron]
com N session N disconnect [0:none, 1:dcdoff, 2:dsroff, 3:break]
已连接 0:04:15
自动检测
115200 8-N-1
SCROLL
CAPS
NUM
捕
打印

Console console command mode and Telnet, help for the command prompt, type ” “ help command to display all available enter commands and command format.

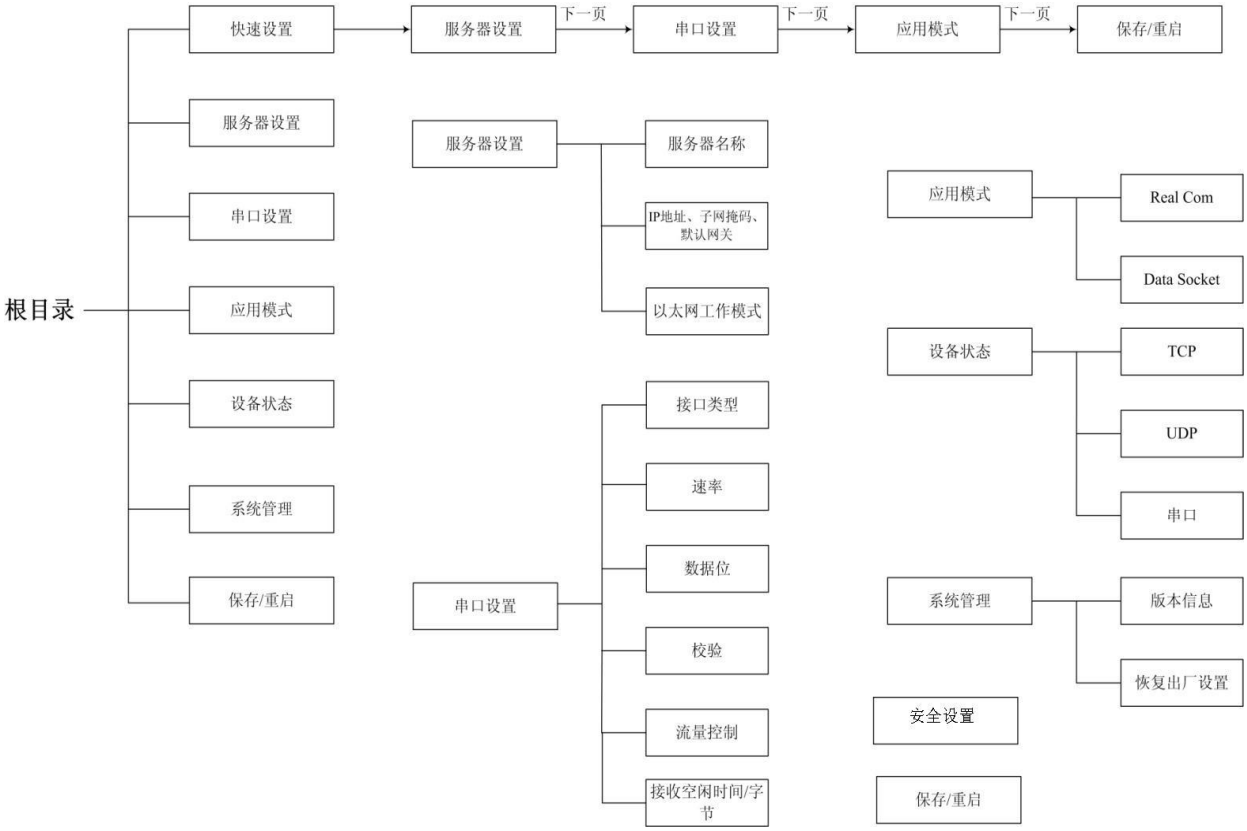
Tip:

(1) If you don't know the IP address of HighTek HK-880A/B/C, and it is not installed on your computer, you can enter through the Console console ” “ show state command queries the current IP address.

(2) If you cannot normal access HighTek HK-880A/B/C Ethernet interface, and cannot determine whether the device is a failure, you can use this method to determine the CPU is working correctly.

3.2 device parameter is set

3.2.1 device parameters



HighTek HK-880A/B/C configuration interface as the figure shows, which outlines the serial device server all the configuration, management options. Each parameter setting which is covered in: 3.2.2 section.

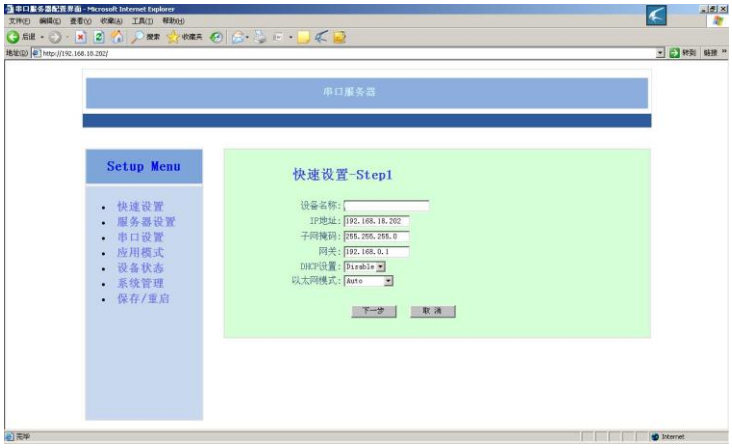
3.2.2 device configuration

Quickly set up

HighTek HK-880A/B/C provides quick Setup Wizard, users can quickly set up by system of a wizard step by step on the serial device server set up, easy to understand, even if the user has never used a serial device server products, you can also set easily configured HighTek HK-880A/B/C.

Quickly set up a function is divided into four of these steps:

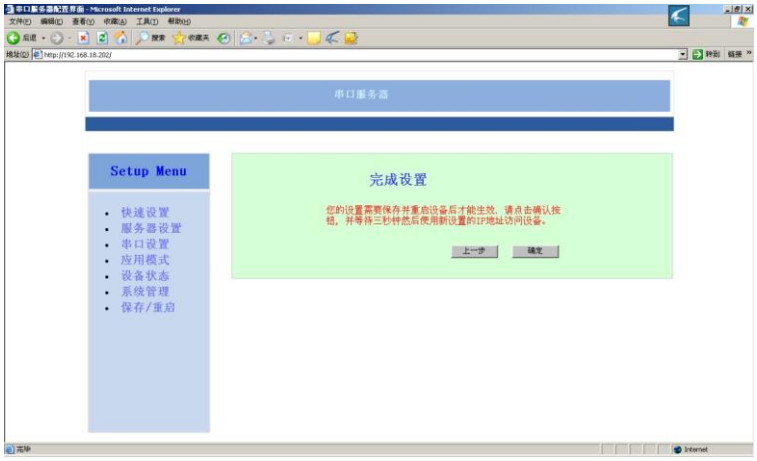
Step 1: set up a serial device server's IP address, subnet mask, gateway, and so on.



Set up the serial port works and rate, and so on.

Step 3: set HighTek HK-880A/B/C the application mode, the system default is the Real COM.

Step 4: save/restart above and save the contents of the configuration to take effect.



Complete the step 4 in the serial port after it is set, the server is able to work just fine, just need to be installed on the computer, and so on Terminal we offer drivers to normal over the network and HighTek HK-880A/B/C of the serial port to communicate.

Server settings

Server settings in the serial interface, you can configure the device HighTek HK-8008A/B/C network parameters, including device name, IP address, subnet mask, gateway, DHCP, Ethernet mode:

The default is Auto adaptive Ethernet mode, the user can manually set to 100M full / half-duplex and half duplex 10M full.

Serial port settings

Serial port settings interface include:

Serial interface types: 232/422/485

Baud-rate: 110 MW to 115200bps

Data bits: 5-8

Stop bits: 1 ×, 1.5 ×, and 2

Parity: none, Odd, Even

Flow control: none, CTS/RTS, DSR/DTR, Xon/XOFF

Receive free time: 5-5000 milliseconds

When HighTek HK-880A/B/C receives data from the serial port and receive idle for more than set value, it received an IP package forwarded. The system default value is 50ms, if you need to increase the realtimeness can be forwarded for 10 or power to the left.

Receive free bytes: crack， the 1024 bytes

When HighTek HK-880A/B/C with the data received from the serial port to reach receive free numerical set in bytes, it directly to the length in bytes of the packet is forwarded. The system default value is 1024 bytes.

Serial port settings interface such as:

The mode of operation

Real COM

Serial device server port can virtual serial port driver (Windows Virtual COM), the HighTek HK-880A/B/C of serial port mapping according to the local host's virtual serial port, a user terminal software to use the virtual serial port just like with the actual serial port for the local host, so all applications the same way as the original serial device software or the communication module without any changes can be used directly, this will not only saves user application software development cycle also reduces the cost of software development. Real COM configured in figure â:

Data Socket

HighTek HK-880A/B/C serial device server provides standards-based communication interface Socket API network, the user can at any TCP/IP-operating systems use the socket access HighTek HK-880A/B/C server's serial port. TCP/UDP Socket mode is divided into the following TCP client, UDP, TCP server, respectively as a TCP client, TCP, and UDP on the service side.

For example, two HighTek HK-880A/B/C product pairs, each one device is configured to TCP Clint and TCP server mode or UDP mode, HighTek HK-880A/B/C ends user's Ethernet service interface, so that applications can put two asynchronous serial terminal equipment through the IP transport network connections.

1．TCP Client (the client)

HighTek HK-880A/B/C work in TCP Client mode, normal launched the initiative to connect to TCP port on the network, such as PC server and distal HighTek HK-880A/B/C (TCP Server using), and so on. So I need to pass the corresponding settings tell HighTek HK-880A/B/C connection which network address and TCP port number. After establishing a TCP connection, HighTek HK-880A/B/C be ptwis the appropriate serial port through the information received at the same time the socket broke, the received data from the Socket and sent to the appropriate interface.

-to-host: remote TCP Server host's IP address

-to-end ports: remote TCP Server host TCP port numbers

Initiate connections: connect conditions

Disconnect the connection: disconnect conditions

Free time: If there is no set time data transmission is automatically disconnected, by： seconds. The default setting of 0 indicates that no data transfer or disconnect.

2．TCP server (server-side)

HighTek HK-880A/B/C serial device server work in TCP server mode, the local TCP port HighTek HK-880A/B/C is in a listening state, waiting for the other Terminal host or remote work in TCP Clint mode of HighTek HK-880A/B/C connection to a local port, when the two sides to establish a connection after serial device server to pass the socket data/, which is mainly used for passive connections distal HighTek HK-880A/B/C equipment for network environments.

In the TCP Server mode requires a local port, host and port-to-end can be filled in.

Initiate connections: connect conditions

Disconnect the connection: disconnect conditions

Free time: If there is no set time data transmission is automatically disconnected, by： seconds. The default setting of 0 indicates that no data transfer or disconnect.

3．UDP

HighTek HK-880A/B/C serial device server work on UDP mode, send/receive data-oriented connectionless UDP datagram communication, both ends of the device without prior to establish a

connection directly to point-to-point, point-to-multipoint or multicast data communication.

-to-host: remote UDP host's IP address

On the distal end-to-port: UDP port number of the host

Initiate connections: connect conditions

Disconnect the connection: disconnect conditions

Free time: If there is no set time data transmission is automatically disconnected, by: seconds. The default setting of 0 indicates that no data transfer or disconnect.

Device status

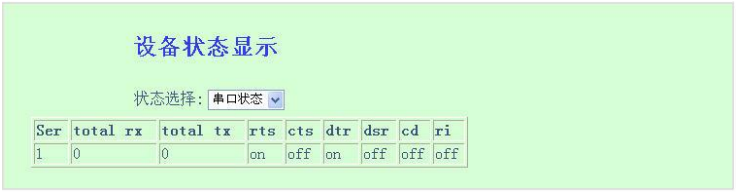
HighTek HK-880A/B/C provides access to the current port status query functionality so that users can conveniently view individual port connections, the data transmission status information, the user is encouraged to master HighTek HK-880A/B/C's health and analyze network failure. In the device status ” “ option you can state on TCP, UDP, State, and serial State for the query, as shown here:

type	Local ip	Remote ip	Local port	Remote port	snd_nxt	rcv_nxt	state
Active	192.168.0.200	192.168.0.3	80	1374	119103	-588381167	ESTABLISHED
Listen	192.168.0.200	0.0.0.0	80	0	0	0	LISTEN
Listen	0.0.0.0	0.0.0.0	961	0	-16777214	0	LISTEN
Listen	192.168.0.200	0.0.0.0	23	0	2122676	0	LISTEN

In the TCP State to view all the current device connections, and send and receive data.

Local ip	Remote ip	Local port	Remote port
0.0.0.0	0.0.0.0	910	0

In UDP State to view all can communicate with the local and remote IP address and port number.

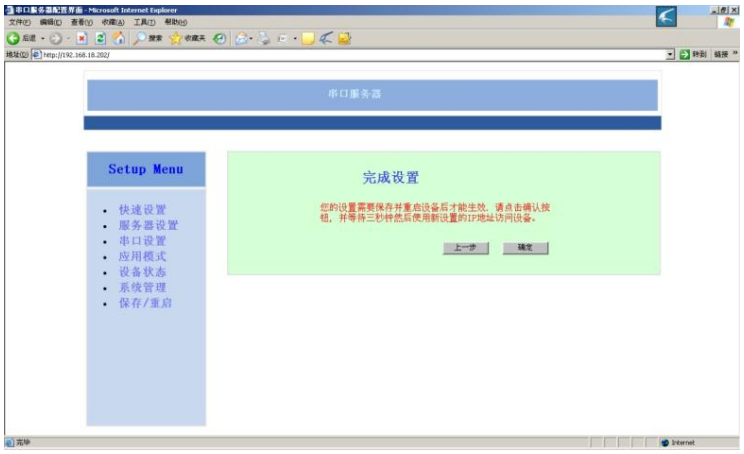


Ser	total rx	total tx	rts	cts	dtr	dsr	cd	ri
1	0	0	on	off	on	off	off	off

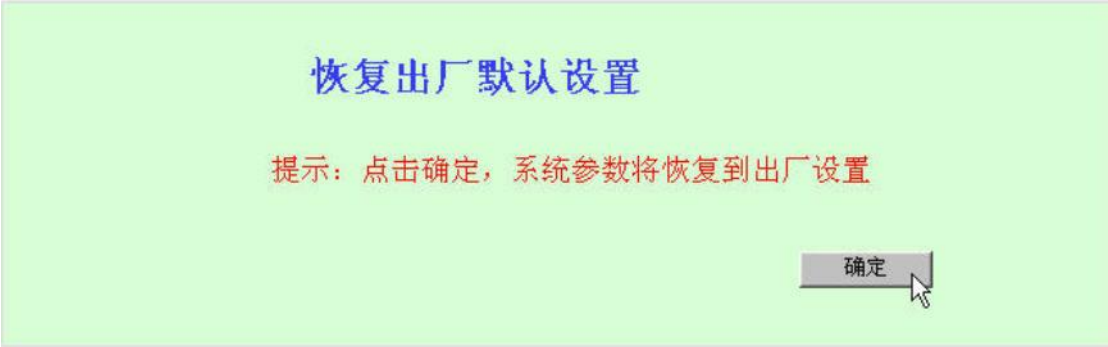
The State can view serial/send data, you can usually change the basis of these values to determine whether a normal HighTek HK-880A/B/C/FAT data.

System management

System management option provides HighTek HK-880A/B/C serial device server software version information, and restore factory settings function



Click on the restore factory default settings “ ” “ determine if you are prompted to click on a single system parameters ” restored to factory default settings:



Restore the system key is “ ” save/restart to complete the recovery after the factory default settings.

Save/restart

When HighTek HK-880A/B/C serial device server settings when you are finished, you can save/restart “ ” option, the currently set information is saved to the HighTek HK-880A/B/C of Flash memory, and restart the device so that the appropriate setting information to take effect. Will usually be able to complete HighTek HK-880A/B/C for this operation.

Chapter IV software installation

4.1 software installation

4.1.1 system requirements

Operating system requirements: Windows 2000/XP

Hardware requirements: PIII500MHz above with 128 m memory

4.1.2 software installation

Run the manuals CD-ROM software setup.exe from the folder, the installation of serial device Server utility on your system.

CD also provides PDF-reading software and serial testing tools, and so on, as shown in the bonus disc.

4.2 software settings

4.2.1 software is running, set

Virtual serial port software installation is complete, double-click the desktop icon or from the

start menu to run the program.

In the “ scan ” tab to search out all of the network HighTek HK-880A/B/C serial device server, and then click ” “ temporary IP can search device IP set up, and then run the Web browser, the input device IP address denglu to HighTek HK-880A/B/C Web configuration interface.

In the virtual serial port tab, you can set the HighTek HK-880A/B/C are mapped to list any virtual COM port, click on set up complete device IP address, the serial number and other configuration information.

Chapter v applications

In many applications, terminal equipment, communication interfaces common RS-232, RS-422 or RS-485 interface, the interface is typically used for local data traffic. As the communications network construction of researchersin and Ethernet technologies, more cross-network, cross-area data communication demand, the traditional RS-232/485/422 and other communication method has been unable to adapt to the new users'demand and transmission network environment, but a large number of industrial control equipment, Terminal, etc with serial communication method, and will continue to be used for a long time, in order for these initerface device to be able to adapt to the new network environment, we developed TCP/IP go RS-232/485/422 serial device server equipment, this will not only be able to facilitate solution serial terminal equipment of network communication problem, but also a great degree of protection over the user's original investment.

5.1 RS232/485/422 terminal communication environment

If the user's terminal equipment RS-232/485/422 communication interface through Ethernet connection to the control center applications on a computer can be matching in the serial terminal HighTek HK-8008A/B/C serial server side, the center control computer to install the virtual serial port driver, the network topology shown in Figure:

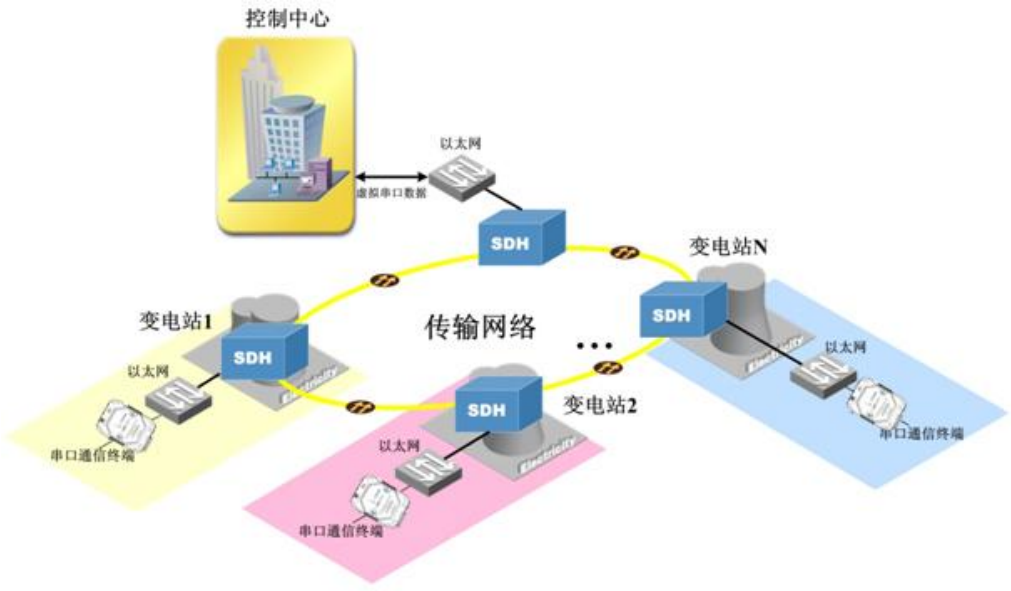


Figure through RS-232/485/422 serial device HighTek HK-8008A/B/C connection with, HighTek HK-8008A/B/C moving from the end of the serial data into TCP / IP-Ethernet data sent to the network.

In the control center, through the application of computer 100Base-T interface to connect to the Ethernet switch, receiving the serial data from the network to the remote serial port receives data packets through a virtual serial port driver into a virtual serial port on the computer, so application software on the computer as an actual serial port can be the same as direct access to the virtual serial port software without any changes.

5.2 Data Socket applications

HighTek HK-880A/B/C serial device server, provides a standard Socket API interface, the user to access a socket in a convenient HighTek HK-880A/B/C serial data on their own, to the actual network environment develop appropriate software to make the project design and management more easy to follow.

HighTek HK-880A/B/C serial device server data Socket provides TCP Server, TCP, UDP Client and three in ways that are applicable to both point-to-point and point-to-multipoint, multicast and other network structure, so that the serial device data access to more flexible, simple as that.

5.3 the typical industry

1.Access / Security / Attendance Management System

2. Network Automation Equipmentλ

3. Telecom / Fiber Networkλ Monitoring

4. industrial /λ process control and management network

5. Medical /λ Laboratory Instruments Network Automation

6. remote video control signal transmissionλ

Chapter 6: Troubleshooting

6.1, Common Troubleshooting

①Cyclophos phamide be available through the Web or Telnet access to HighTek HK-880A/B/C, and it cannot determine the IP address.

Solution: you can Console console or the virtual serial port software to find the IP address of HighTek HK-880A/B/C.

②Serial tool to test the serial port to receive when you have found in eBook.

Solution: view the serial baud rate setting test tools and HighTek HK-880A/B/C baud rate is consistent, if not in line with the change to the HighTek HK-880A/B/C baud rate.

③Insert the Internet line of three parts, discover why your computer connection direction or HighTek HK-880A/B/C link instructions does not light.

Solution: check the network cable is healthy, if HighTek HK-880A/B/C to connect your computers, network cards use the crosshair, if the connection switches, HUB, and so on interconnection equipment through-line is used.